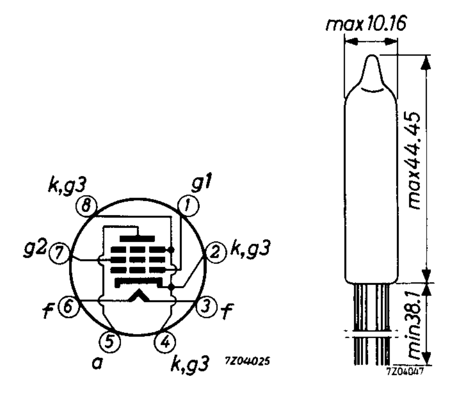
S.Q. TUBE

Special quality pentode designed for use as A.F. power output tube.

QUICK REFERENCE DATA			
Life test	1000 hours		
Mechanical quality	Shock and vibration resistant		
Base	Subminiature		
Heating	Indirect A.C. or D.C.; parallel supply		
Heater voltage	V_f	6.3	V
Heater current	I_f	450	mA
Anode current	I_a	30	mA
Output power	W_o	1.0	W

DIMENSIONS AND CONNECTIONS Dimensions in mm

Base: Subminiature



The leads should not be soldered nearer than 5 mm to the seal and should not be bent nearer than 1.5 mm to the seal.

CHARACTERISTICS

Column I Nominal value or setting of the tube
II Range values for equipment design: Initial spread
III Range values for equipment design: End of life

		I	II	III	
Heater voltage	V_f	6.3			V
Heater current	I_f	450	420 - 480		mA
Anode voltage	V_a	100			V
Grid No.2 voltage	V_{g_2}	100			V
Grid No.1 voltage	$-V_{g_1}$	9			V
Anode current	I_a	30			mA
Grid No.2 current	I_{g_2}	2.2			mA
Mutual conductance	S	4.2			mA/V
Anode supply voltage	V_{ba}	109			V
Grid No.2 supply voltage	V_{bg2}	109			V
Cathode resistor	R_k	270			Ω
Anode current	I_a	30	23 - 37		mA
Grid No.2 current	I_{g_2}	2.2	max. 4.0		mA
Mutual conductance	S	4.2	3.5 - 4.9		mA/V
Internal resistance	R_i	15	min. 10		kΩ
Negative grid No.1 current	$-I_{g_1}$	1		2	μA
Output power Load resistance $R_{a\sim}$ = 3 kΩ	W_o	1.0	min.0.75	ΔW_o : max. 25%	W
Leakage current between cathode and heater Voltage between cathode and heater V_{kf} = 100 V	I_{kf}		max. 15	max. 60	μA

CHARACTERISTICS (continued)

		II	
Vibrational noise output	V_o	max. 100	mV_{RMS}

Anode supply voltage V_{ba} = 110 V

Grid No. 2 supply voltage V_{bg_2} = 110 V

Cathode resistor R_k = 270 Ω

Cathode by-pass capacitor C_k = 1000 pF

Anode resistor R_a = 2 kΩ

Vibration frequency = 50 Hz

Acceleration = 15 g

CAPACITANCES

		I	II	
Anode to grid No. 2, cathode, heater and screen	C_{a/g_2kfs}	7.2	6.5 - 8.5	pF
Grid No. 1 to grid No. 2 cathode, heater and screen	C_{g_1/g_2kfs}	6.5	5.5 - 7.5	pF
Anode to grid No. 1	C_{ag_1}		max. 0.2	pF

SHOCK AND VIBRATION RESISTANCE

The following test conditions are applied to assess the mechanical quality of the tube. These conditions are not intended to be used as normal operating conditions.

Shock

The tube is subjected 5 times in each of 4 positions to an acceleration of 500 g supplied by an NRL shock machine with the hammer lifted over an angle of 30°.

Vibration

The tube is subjected during 32 hours in each of 3 positions to a vibration frequency of 50 Hz with an acceleration of 2.5 g.

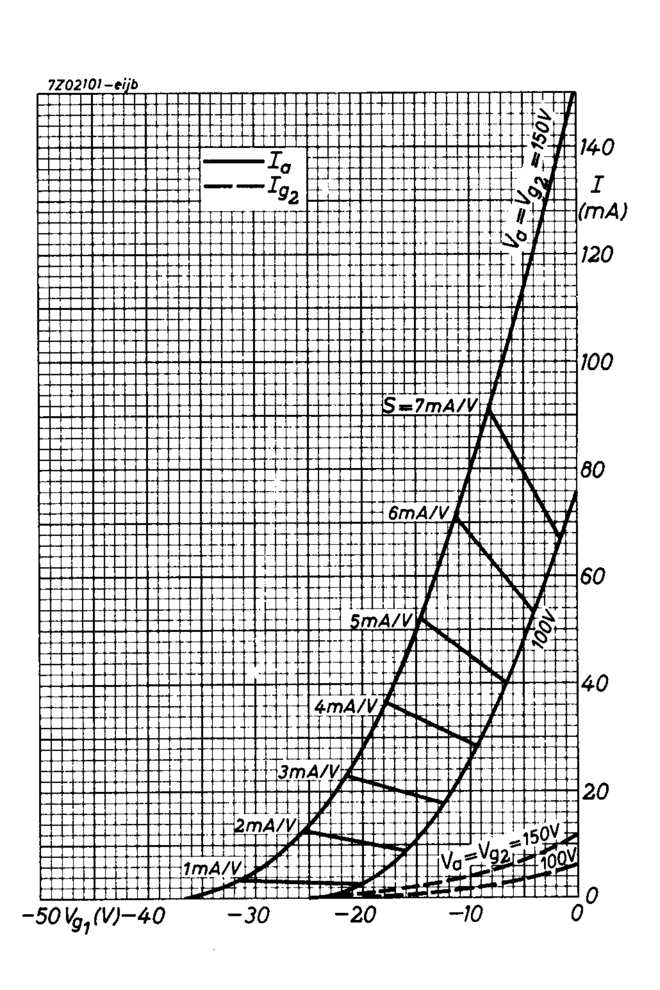
LIFE

Production samples are tested to be within the end of life values (column III) under the following conditions during 1000 hours

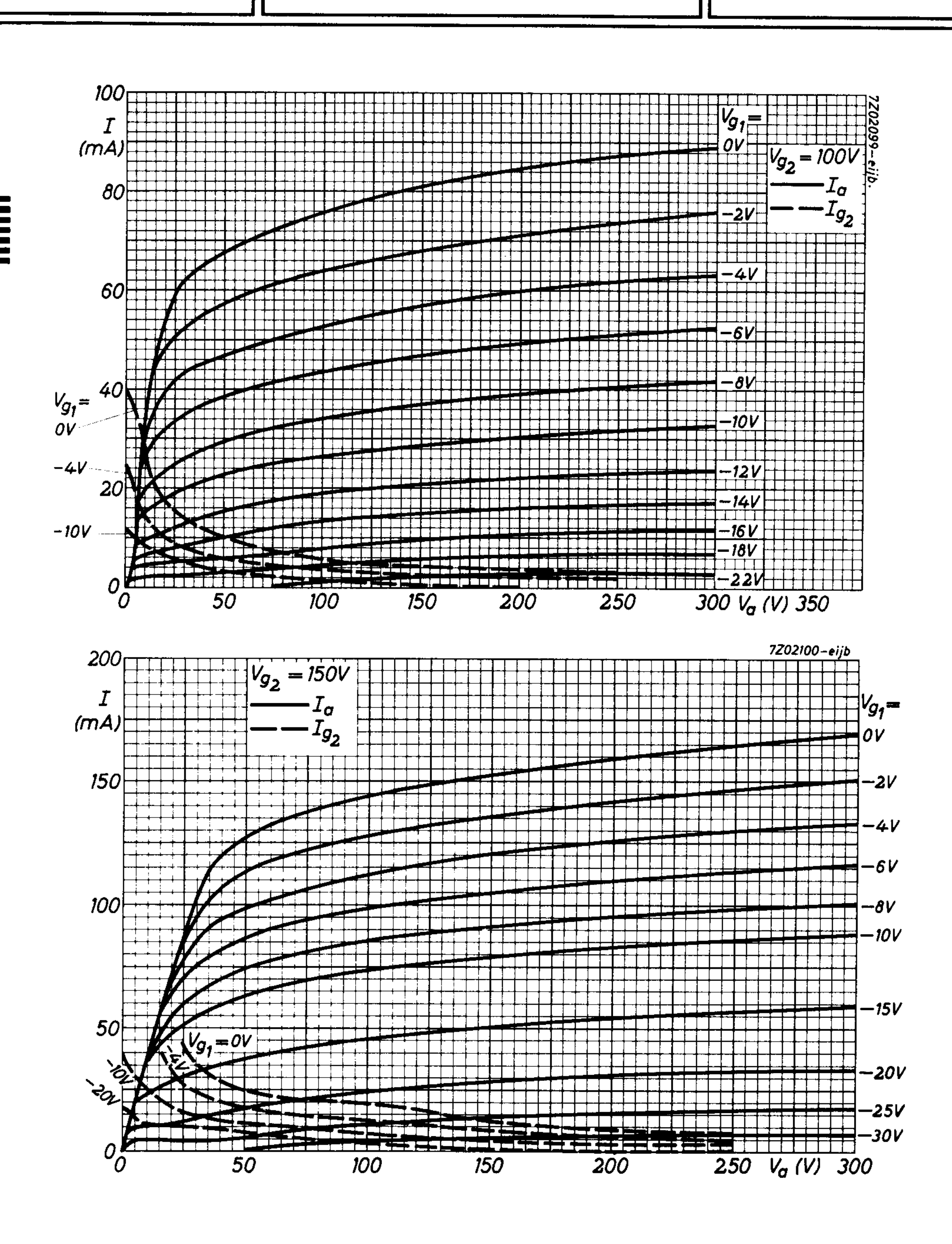
Anode supply voltage	V_{ba}	109	V
Grid No.2 supply voltage	V_{bg_2}	109	V
Cathode resistor	R_k	270	Ω

LIMITING VALUES (Absolute max. rating system)

Anode voltage	V_{a_o}	max.	330	V
	V_a	max.	165	V
Grid No.2 voltage	$V_{g_{2o}}$	max.	310	V
	V_{g_2}	max.	155	V
Grid No.1 voltage	$-V_{g_1}$	max.	55	V
Anode dissipation	W_a	max.	4	W
Grid No.2 dissipation	W_{g_2}	max.	1	W
Cathode current	I_k	max.	50	mA
Peak voltage between cathode and heater	V_{kf}	max.	200	V
Grid No.1 resistor, fixed bias	R_{g_1}	max.	0.1	MΩ
automatic bias	R_{g_1}	max.	0.55	MΩ
Bulb temperature	t_{bulb}	max.	220	°C



7Z02101-eijb
I_a
I_{g_2}
$V_a = V_{g_2} = 150V$
S=7mA/V
6mA/V
5mA/V
4mA/V
3mA/V
2mA/V
1mA/V
100V
$V_a = V_{g_2} = 150V$
100V
140
I (mA)
120
100
80
60
40
20
0
-50 V_{g_1} (V) -40
-30
-20
-10
0



7Z02099-eijb.
I (mA)
Vg1=
0V
-2V
-4V
-6V
-8V
-10V
-12V
-14V
-16V
-18V
-22V
Vg2 = 100V
Ia
Ig2
Vg1= 0V
-4V
-10V
Va (V)
7Z02100-eijb
Vg2 = 150V
Ia
Ig2
Vg1=
0V
-2V
-4V
-6V
-8V
-10V
-15V
-20V
-25V
-30V
Vg1 = 0V
-4V
-10V
-20V
Va (V)



5902

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7	FP	2001.05.12